

NEWS RELEASE

FOR IMMEDIATE RELEASE

MEGATEK UNVEILS 3D SURFACE PROCESSOR FOR 7200 FAMILY

DALLAS, TX, Aug. 3, 1981 -- Megatek Corporation chose the opening of the SIGGRAPH '81 Show to introduce a 3D surface processor option for use with its WHIZZARD 7200 family of high performance computer graphics systems.

The new hardware option permits users to fill in any portion of a line drawing to create solid, textured or patterned surfaces. This capability is useful in virtually all computer graphics applications but it is of particular value for uses such as seismic data presentation for oil and gas exploration, finite element or solid object modeling, and layout of integrated circuits.

The 3D surface processor is easily added to the Graphics EngineTM of any member of the WHIZZARD 7200 family: the 7210 stroke refresh system, the 7250 raster refresh system or the 7290 dual output stroke/raster refresh system. Using a pipelined approach and a high speed bit slice processor, it is usable with both monochrome and color

MEGATEK
MEGATEK CORPORATION

World Headquarters
3931 Sorrento Valley F
San Diego, CA 92121
Telephone: (714) 45
Telex: 910-337-1270

output displays and provides extremely high speed surface processing for both baseline fill and concave or convex polygons.

"This processor provides a true polygon fill capability, which means a polygon need only be defined and no other information needs to be supplied by the user," explained Hiram T. French, Megatek Director of Marketing. "Polygons to be filled on this system need not be standard sizes and shapes or even planar. They may have as many as 670 defined sides and they will automatically be filled with surface vectors generated by the processor. Using our proprietary algorithm and pipelining setup with vector calculation, this processor can generate fill vectors in less than 2.5 microseconds per vector."

The fill density is programmable. Fill lines may be specified as horizontal or vertical and all of Megatek's standard line styles may be used in conjunction with the fill lines to create pattern or textured fills. Once an object is filled with a color, the outline of its shape may be drawn in another color, for emphasis.

"A unique feature of this new 3D surface processor is that it allows for true holes in objects," French added. "With other systems when an object is filled in, any place

the user wants a hole, that hole is simply painted in a background color within the first object. The problem with this method is that any data which lies behind the hole is covered.

"With the Megatek system, the hole is actually left unpainted within the filled object, thus any graphic data which would normally be seen through the hole is seen," he said.

Megatek's new surface processor may be used with or without the optional WHIZZARD hardware module for clip, rotate, scale and translate (HCRST) functions. When combined with the HCRST module the surface processor's fill function occurs after a rotate, scale or translate function, but before the clip function. The filled object thus may be rotated, scaled or translated dynamically -- a capability which has not been available before.

"In the past, users could only create line drawings on the screen," French said. "If an object required filling in, the user had to define in software the vectors used to fill it in, line by line. This not only required CPU resources, it also consumed a large amount of display list memory. The surface processor now allows users to automatically fill in 3D surface areas defined as

complex polygons without the need for special software, extra display memory or added involvement with the host computer."

Megatek's new 3D surface processor will be available for deliveries beginning in December. It is priced at about \$5,000.

Both the 3D surface processor and Megatek's unique WHIZZARD 7290 dual output graphics system will be on display for the first time in booth #607 at the SIGGRAPH '81 Show.

Megatek Corporation, headquartered in San Diego, CA, is a recognized leader in the field of high quality, high performance refresh vector graphics systems. The company manufactures a full line of graphics hardware products as well as device-dependent and device-independent software systems. The company recently announced that it has agreed in principal to be acquired by United Telecommunications, Inc., of Kansas City, MO. Upon completion of this acquisition it is anticipated that Megatek will operate as part of United Telecom's Computer Group.

#

For further information, contact.

Susan Hartwig-Hood
Manager of Marketing Communications (714) 455-5590

Agency contact:

Don Allen, The Allen Group (714) 547-7672

6-083

NEWS RELEASE

KANSAS CITY, MO.--Execution of a definitive agreement for the acquisition of Megatek Corporation by United Telecommunications, Inc. was announced jointly today by Paul H. Henson, Chairman of United Telecom, and Robert D. Smith, President of Megatek. The agreement is subject to the approval of Megatek's shareholders.

Under the terms of the agreement, United Telecom will exchange some 1.15 million shares of its common stock for the approximately 1 million common shares of Megatek.

Megatek, headquartered in San Diego, Calif., designs and assembles computer graphic display terminals and produces software utilized in linking graphic display terminals with a variety of remote and general purpose computers.

Henson said it is contemplated that Megatek will be operated as a part of United Telecom's computer group, which includes companies engaged in providing remote computing and data communications network services. He said Megatek's hardware and software products add essential elements to United's remote computing strategies of developing "enhanced computer solution" products and services.

#

MEGATEK
MEGATEK CORPORATION

World Headquarters
3931 Sorrento Valley Blvd.
San Diego, CA 92121
Telephone: (714) 455-5590
Telex: 910-337-1270

NEWS RELEASE

COMPANY BACKGROUND

The story of Megatek Corporation is the story of a company that spotted a marketing opportunity in a related industry and took advantage of it so well that what once was a sideline business has grown larger than the company's original business. Although Megatek today is regarded as the leading independent manufacturer of high quality refresh computer graphics systems, the company was formed primarily to pursue government contract research and development work.

Founded in 1972 by former members of the technical staff of Astrophysics Research Corporation, Megatek was a significant developer of electromagnetic propagation and communications systems for the U.S. Navy. Much of this work required the use of dynamic line drawing capabilities, a segment of the computer graphics field that was only beginning to develop in the early 1970's. Based on their own application needs and the difficulties encountered in finding interactive graphics products, Megatek determined that there was a growing industrial market for high



World Headquarters
3931 Sorrento Valley Blvd.
San Diego, CA 92121
Telephone: (714) 455-5590
Telex: 910-337-1270

performance interactive graphics capabilities. The decision thus was made to explore this potential market.

Product History

The first Megatek graphics product to appear was the BP721 minicomputer refresh graphics interface, in 1973. This product fit in just one slot of standard minicomputers and provided on-board refresh memory and point and vector intensity control. Several hundred of these interfaces were sold over the next few years and by 1975 Megatek had formalized its Computer Graphics Division.

In May of 1975 the company entered the systems end of the business with the introduction of the MEGRAPHIC 6000. This system used a powerful minicomputer and a wide range of options and peripherals to provide high performance vector refresh graphics in a standalone system. The 6000 was attractive to both OEM and end user customers and its sales growth prompted the development of the next generation of products: the MEGRAPHIC 5000 and 7000 systems, which were introduced in 1977.

Both of these new models shared the same advanced vector generation technology -- the 5000 coupled it closely to a particular minicomputer family while the 7000 was designed to be host-independent. Each graphic processor was based on bipolar bit-slice microprocessors which accessed the refresh memory, interpreted the display list commands,

controlled graphic functions and prepared X-Y coordinate pairs for input to the vector generator.

In 1979, new semiconductor technologies permitted the addition of significant performance enhancements to these original system products and the WHIZZARD 5000 and 7000 product families were born. The new 5000 contained its own minicomputer and was operable either standalone or as a terminal to a host computer. A product variation on the 5000 was the WHIZZARD 5014, which added a communications capability and the EMUTEKTM software to emulate the functions of a Tektronix 4014 terminal.

The WHIZZARD 7000 was a microprocessor-based, self refreshing vector graphics system designed to be used with virtually any host computer. Its graphic display system combined a number of independent modules interconnected by an asynchronous, tri-state bus structure. It contained its own RAM refresh memory and a microcontroller for hardware-implemented graphics features and it supported a full range of intelligent graphics peripherals and optional hardware transformation modules.

The product development hasn't stopped with the 7000. In 1980, Megatek introduced a new, upgraded family called the WHIZZARD 7200. This offers enhancements to the 7000 line in the form of the WHIZZARD 7210 vector refresh system, usable either with a high speed parallel interface to a host computer or as a remote terminal workstation, using

serial RS-232 interfacing for communications purposes.

An important member of the 7200 family which was introduced in 1980 is the WHIZZARD 7250. This product is significant because it marks the entry of the company into the raster graphics market. Typically for Megatek, this product is high powered. It offers virtually all of the high performance line drawing features found in the company's vector refresh systems but in raster display models which provide high quality color displays with up to 10 times the picture update speeds of the nearest competitors. Such line drawing performance has been unavailable in raster systems previously.

A unique product called the WHIZZARD 7290, introduced in 1980, combines both vector and raster displays in a single system. The 7290 is the only dual output system on the market today and it is ideal for users such as systems houses, graphics laboratories and engineering departments where a mixed need for design and analysis tasks exists.

The newest Megatek product family is the WHIZZARD 6200 line of graphics workstations. They, too, bring the company into a totally new market -- that of medium cost, high performance graphics terminals. Intended for broad, general use in CAD/CAM applications, this family of four workstation products provides many of the same dynamic line drawing features found in the 7200 family, yet they cost about half as much -- approximately the same as low performance storage tube devices.

The WHIZZARD 6250 offers 512x512 resolution in a 13-inch color raster monitor packaged with a keyboard and joystick control in a desk-style cabinet. The WHIZZARD 6240 provides a 512x512 resolution with a 19-inch black and white monitor, while the WHIZZARD 6245 offers 1024x1024 resolution in a 19-inch black and white raster monitor and the WHIZZARD 6255 provides 1024x1024 resolution in a 19-inch color raster monitor. All three of the 6200 family members are connected to a local or remote CPU via RS-232 asynchronous interfacing.

The WAND 6200 software system used with the 6200 family is a subset of the WAND 7200 software system and application programs written in ANSI standard FORTRAN using WAND 6200 will be compatible with any WHIZZARD 7200 family product.

In addition to this family of systems, Megatek also has pioneered in software support systems for use with large mainframe computer systems. The TemplateTM software system is a high level general purpose computer graphics package that provides both computer and device independence in a graphics application development system. It is usable on any 24-bit or larger computer processor and with virtually any commercially available graphics terminal device. It handles dynamic and static applications in both two- and three-dimensional environments.

Company Growth

The diversity of its products has meant significant

growth for Megatek since its founding nine years ago. Originally located in the Harbor City area of San Diego, Megatek now is headquartered in a complex of buildings totalling more than 100,000 square feet of space in San Diego's Sorrento Valley area. These two buildings house all manufacturing, engineering, administrative and marketing activities. Another 8,000 square feet of space in a nearby location is used for research and development work.

The company isn't growing just locally, however. The company now has four domestic regional offices in the West, the South and the Northeast -- in San Diego, Atlanta, Dallas and Boston, respectively.

This expansion is continuing beyond domestic borders as well. Megatek opened its own European headquarters office during 1980 and has signed up major distributors such as Rhode & Schwarz in Germany to increase its market penetration overseas. Total worldwide employment now has topped the 200 mark.

The company's management team has grown as well. It is headed by Robert D. Smith, president and treasurer; Donald J. Adrian, vice president and corporate secretary; Walter A. Foley, vice president, and Peter J. Shaw, vice president.

Perhaps the greatest growth of the last eight years has been in Megatek's sales -- substantially all of it in

the computer graphics area. Starting with its first product, which achieved what would now be termed nominal sales in 1975, the company tripled its graphics sales each year through 1978 and has doubled them in fiscal 1979 and 1980.

This level of sales success reflects the acceptance by the marketplace of Megatek's approach to the graphics industry. Just as the more successful computer companies have been those who have stayed ahead of market demands by correctly anticipating needs, so Megatek has preceded the requirements of its customers and been ready with new hardware and software products when the demand arrived.

Based on this philosophy -- and the new products which are scheduled for introduction in the near future as a result of it -- the company's sales should increase significantly in fiscal 1981 and beyond.

#

#

NEWS RELEASE

Market Background

COMPUTER GRAPHICS MARKET TO SEE EXPLOSIVE GROWTH

Comments on Future Trends
by Peter J. Shaw, Vice President
Megatek Corporation

The computer graphics marketplace is on the verge of explosive growth, with a compounded annual growth rate of more than 35 per cent projected over the five year period from 1979 to 1984. In 1979, the entire graphic industry shipped more than \$1 billion worth of equipment and that total is expected to rise to at least \$4.5 billion by 1984.

This projection is based on worldwide shipments of nearly 69,000 graphic terminals in 1979 -- a figure which is expected to grow to 454,000 units by 1984. The largest segment of the graphics market is the computer-aided design and computer-aided manufacturing (CAD/CAM) area, but business graphic systems is now an extremely fast growing area of the marketplace.

Business graphics volume rose from \$13 million in 1979 to \$126 million in 1980 and this market segment is expected to grow at a compounded rate of 59 per cent over the five years. CAD/CAM sales totaled \$332 million in 1979 and grew

MEGATEK
MEGATEK CORPORATION

World Headquarters
3931 Sorrento Valley Blvd.
San Diego, CA 92121
Telephone: (714) 455-5590
Telex: 910-337-1270

to \$1.825 billion in 1980 and it is this larger base which accounts for the lower relative growth rate of 41 per cent projected for the five years from 1979 to 1984. Make no mistake about it, however, CAD/CAM makes up the largest portion of the computer graphics market and it is in this arena that most of the major advances in technology will come. For graphics vendors who want to be in the middle of the hardware action, CAD/CAM terminal products are a must.

As the techniques of graphic display have improved, the cost of graphic equipment has come down. The availability of today's stroke and raster refresh systems has spurred tremendous growth in the CAD/CAM marketplace because they give users more capability than was available with traditional storage tube devices yet are priced about the same as these older forms of graphics terminals.

CAD/CAM graphic systems generally are used for automating design, drafting, engineering and manufacturing tasks. The benefits of using such systems include both large savings in time and significant improvements in productivity. This results in better new product development lead times; savings resulting from engineering analysis performed in simulation, not in trial and error manufacture; better quality of designs due to improved dimensional accuracy; better utilization of materials, and an easing in the shortage of manpower.

In the past, the most common graphic display used in CAD/CAM systems was the storage tube, primarily because of its low cost and high display density. But a tradeoff had

to be made for that low cost because storage tube terminals did not offer multiple colors, they were slow in drawing screen images and, perhaps most important, they offered no dynamic interaction and display between the operator and the terminal for on-line design and analysis tasks.

The nature of the storage tube requires that once a drawing has been made on the screen, the entire picture must be re-drawn if any element of the picture is to be changed. This means that while the engineer can draw high resolution designs, the process is slowed tremendously by the inability to interact dynamically with the screen image and to change it easily for design analysis. This has led to a "hit re-paint and have a cup of coffee" syndrome.

High performance stroke refresh and color raster refresh graphic systems provide these benefits but they usually cost more -- anywhere from \$30,000 to more than \$100,000. But the situation is changing dramatically. Of all the terminals shipped in 1979, one third were high performance displays and two thirds were medium and low cost storage tube or raster types of displays. Over the next few years there will be subtle changes in this breakdown. One third of this total will still be high performance, high cost displays and the remainder will be medium and low cost terminals -- but there will be a noticeable difference in how much work can be done with new types of terminals. These will gradually replace the mid-range terminals of today to provide new levels of

capability for a broad variety of engineering needs.

One recent study has shown that there are just over one million engineers in the United States and of these, more than 85 per cent are involved in electrical, mechanical, civil and industrial engineering -- all prime users or prospects for CAD/CAM systems. The survey theorizes that the U.S. market for these systems in the top four engineering areas alone amounts to an estimated 26,000 systems -- each with anywhere from two to 16 display terminals. What will this mean for the graphics industry?

In the decade of the 1980's computer graphics will encompass three primary arenas: the high end systems required for very sophisticated CAD/CAM and multi-function application; the emerging intermediate or mid-level systems used for broad, general purpose needs; and the new low end systems which will provide basic but unsophisticated graphics functions for the very broad business and management information types of applications.

There will always be a requirement for sophisticated high-end systems costing \$25,000 to \$40,000 and up. These are the systems which offer three-dimensional graphics capabilities with many colors, matrix transformations and a wide variety of sophisticated peripheral devices. These will continue to offer distributed intelligence at the user level and programmability using standard high level computer languages. They will offer workstation capabilities using

high speed communications links with the host computer. And for the top dollar the user spends he will get the fastest, most dynamic systems with the highest resolution available to meet the high quality output required.

The mid-range graphics systems which are currently emerging will find ever-increasing acceptance during the 1980's. These will be new versions of the high-end systems which will provide perhaps 75 per cent of the functionality for users who don't need that extreme sophistication but who do want some of the many significant features. They will provide high quality graphics capabilities but will be priced in the \$10,000 to \$25,000 range. The key to their acceptance is that they will provide excellent interactive features with some local intelligence at this lower price. They may well serve as introductory or beginning systems for users who haven't employed graphics in the past but who want to add this capability to their existing computer systems.

The newest marketplace for graphics is the low end. Here the user eventually will have a wide variety of graphics terminals available. These will offer fewer colors with less resolution -- perhaps 512x512 pixels or less -- and will have comparatively slow picture update rates. But they will be intended for business graphics, management information, process control and monitoring and less sophisticated applications. And they will have the advantage of very low cost -- under \$10,000 within the coming year and as low as \$5,000

or slightly less by 1983. These types of systems will be limited in terms of their functionality and will consist usually of only a display tube and a keyboard.

These developments in computer graphic systems are made possible by new developments in the semiconductor industry. The availability of 64K RAM's means more memory can be distributed to the graphics processor, both to provide capacity for larger display lists, more colors and better resolution as well as to reduce the computing load on the host. The availability of 16-bit microcomputers -- and ultimately, 32-bit microcomputers -- will promote the development of very sophisticated graphics workstations. Special purpose "graphic function chip sets" will provide more power for less money as well. And high production volumes and the resulting economies of scale will only bring prices further downward, thus making graphics available to even more users.

In a parallel trend with these hardware developments suppliers will also be providing more and better software systems, both operating and application types. This will tend to promote the acquisition and implementation of graphics systems by the users themselves, rather than just by OEM's. Packaged systems will still be sold for very specific applications, such as PC board design, but as the user community becomes more familiar with and competent in graphics system implementation increasing numbers of people

will tend to select and configure their own hardware systems and either buy and modify or write their own application software.

Software also will be compatible, across the board, thanks to the growing acceptance of the "CORE" guidelines established by ACM SIGGRAPH. A few hardware manufacturers currently follow these guidelines and make their software usable on all hardware offered: more will follow this trend in the future because it will cease to be merely a nice thing to do -- it will be a requirement in the future. In addition, so-called "universal" software systems which are computer and device independent, such as TemplateTM, will provide a graphics programming capability to users who haven't written applications programs for graphics systems before. These types of software systems will tend to advance the use of graphics as well because of their portability and device independence.

Taking the hardware and software trends together, the graphics industry will tend to more closely parallel the minicomputer industry of 5-8 years ago; the emphasis will change from the sale of "iron" and OEM sales of end user application software to the addition of greater value by the suppliers of graphics systems particularly in the form of software, customer service and support. More of the major computer manufacturers will make new entries into the graphics marketplace and more software will be sold as

standard packages for end user application. This will cause a shakeout in the graphics industry over the next two to three years as the hardware-only suppliers are forced to leave the business or to concentrate on narrow segments. The remaining suppliers will provide more across-the-board solutions for the end user, just as computer manufacturers now do within the computing industry itself.

And just as the more successful computer companies are those who have stayed ahead of market demands by anticipating needs, the truly successful computer graphics companies will be those who offer multiple capabilities. They will be the ones who are able to adapt quickly to advanced technological developments and offer new products that make use of custom LSI to offer improved graphics capabilities at lower costs. And they will be the ones who develop new and broader graphics software systems for broad use by large numbers of users.

#

#

6-075

TemplateTM is a proprietary software product of Megatek Corporation